

## New or Noteworthy Plant Collections from Myanmar (2) *Aponogeton lakhonensis*, *Cryptocoryne cruddasiana*, *C. crispatula* var. *balansae* and *Stichoneuron membranaceum*

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In the course of floristic research of Myanmar, some noteworthy monocots; *Aponogeton lakhonensis* A. Camus (Aponogetonaceae), *Cryptocoryne cruddasiana* Prain, *C. crispatula* Engler var. *balansae* (Gagnep.) N. Jacobsen (Araceae), *Stichoneuron membranaceum* Hook. f. (Stemonaceae), were collected. Of these *Cryptocoryne cruddasiana*, endemic to upper Myanmar, was recollected in Kachin State (the northernmost state in the country) after an interval of more than half a century. Other taxa are new to the flora of Myanmar. These materials may also be significant in clarifying the floristic elements of Myanmar and their relationship with those of neighboring regions.

**Key words:** *Aponogeton*, *Cryptocoryne*, Flora, Myanmar, *Stichoneuron*.

With its wealth of plant diversity, Myanmar (Burma) constitutes a significant component of the Indo-Myanmar Hotspot in terms of both land area and biodiversity (van Dijk et al. 2004). Thus far, ca. 11,800 species of spermatophyte have been reported from Myanmar (Kress et al. 2003) though many more are likely to exist (Tanaka 2005).

In the course of ongoing inventory work in Myanmar, thus far several new records and noteworthy plant collections have been reported (Tanaka et al. 2006a, 2006b, Tanaka and Nagamasu 2006).

As reported in a previous paper (Tanaka et al. 2006b), we have been conducting inventory work in the Hukaung Valley Tiger Reserve, Kachin State (the northernmost State of the country) since September 2005. During these field expeditions, *Aponogeton*

*lakhonensis* A. Camus, *Cryptocoryne cruddasiana* Prain, *C. crispatula* Engler var. *balansae* (Gagnep.) N. Jacobsen (Araceae), *Stichoneuron membranaceum* Hook. f. (Stemonaceae), were collected. The importance and characteristics of these collections are noted below. Identification of *Stichoneuron membranaceum* was based on morphology and cpDNA *rbcL* sequences. The top set of the voucher specimens was retained in Tanaing Office, Forest Department, Ministry of Forestry, Union of Myanmar. The duplicates are deposited in the herbaria of Makino Botanical Garden (MBK) and the University of Tokyo (TI). These materials may also be significant in clarifying the floristic elements of Myanmar and their relationship with those of neighboring regions.

## APONOGETONACEAE

**Aponogeton lakhonensis** A. Camus in Not. Syst. 1: 273 (1909); Fl. Gén. Indoch. 6: 1226 (1942) – van Bruggen in Blumea 18(2): 479 (1970) – X. Z. Sung, Fl. Reip. Popul. Sin. 8: 34 (1992). [Fig. 1]

Van Bruggen (1970) reduced several Indo-Chinese species to the synonymy of *A. lakhonensis*, a species which shows a wide distribution range (van Bruggen 1970); hitherto, however, it has not been reported from Myanmar. For Myanmar flora Kress et al. (2003) cited only two species, *A. undulatus* Roxb. and *A. natans* (L.) Engl. & Krause in their checklist. This is apparently new to the flora of Myanmar.

The plants collected in this study basically correspond with the description by van Bruggen (1985). However, the plants in this study are different from Bruggen's description in the length of carpel and proportion of carpel to stamens: the carpel and stamens are 2.2–2.6 mm and 1.9–2.1 mm in length respectively, while van Bruggen's description gives dimensions of 1–1.75 mm and 1.5–3 mm. Van Bruggen (1985) also noted that specimens from Indonesia and Vietnam have only submerged leaves, whereas those of China and Thailand have both submerged and floating leaves. The plants collected in this study bore only submerged leaves in collection sites in the slow running water of 60–120 cm deep, though only floating leaves were produced in cultivation in the still 15 cm deep water in the aquarium of Botanical Gardens, Graduate School of Sciences, University of Tokyo.

Voucher specimens: MYANMAR. Kachin State; between Takhet Village and Khalone Village, ca. 10 miles east of Shinbuiyang, 26°38'59"N, 96°20'55"E, alt. 190 m, 10 December 2005, J. Murata & al. 040939 (MBK, TI); along the Ledo Road between Shinbuiyang and Tanaing. 248 m alt., 26°34'N, 96°30'E, 16 February 2007, J. Murata & al. 041619 (MBK, TI).

Distribution: India, Myanmar, Thailand, Vietnam, Cambodia, China, Indonesia and

Celebes.

## ARACEAE

**Cryptocoryne cruddasiana** Prain in J. Asiat. Soc. Bengal 69(2): 174 (1900).

[Fig. 2]

*Cryptocoryne burmensis* Rataj, Rev. Gen. Cryptocoryne: 32 (1975).

It is remarkable that this species, first collected from Kachin Hill by S. Mokim in 1889 and later recognized as a distinctive species by Prain (1900), has been known only from a few collections made in 19th century. Our expedition to Hukaung Valley in Kachin State, northern Myanmar, succeeded in rediscovering this species after an interval of more than half a century. Finally we found that this species, endemic to Myanmar, is commonly growing in swampy riverbanks not only in Hukaung Valley, but also along the main stream of the Ayeyawady (Irrawaddy) river. This species seemed to be dormant in the rainy season when it is covered with deep water and starts growing at the end of the rainy season. It flowers in December to January when the habitat is covered with shallow water of 1–2 cm deep or rather above water.

Voucher specimens: MYANMAR. Kachin State; between Khalone Village, 9 miles east of Shinbuiyang, and Shinbuiyang, 26°40'50"N, 96°15'20"E, alt. 230 m., on sandy riverbed, 80 cm depth, 5 December 2005, J. Murata & al. 041201 (MBK, TI).

Distribution: Endemic to N. Myanmar.

**Cryptocoryne crispatula** Engl. var. **balansae** (Gagnep.) N. Jacobsen in Aqua Planta 1991(1): 29 (1991). [Fig. 3]

Jacobsen (1991) recognized five varieties under *C. crispatula* Engler. *Cryptocoryne crispatula* and its infraspecific taxa are known to be distributed in India, Thailand, southward to Indo-China and Malesia. var. *balansae* has thus far been reported from Thailand, Vietnam to China (Rataj 1977). The species is newly recorded from

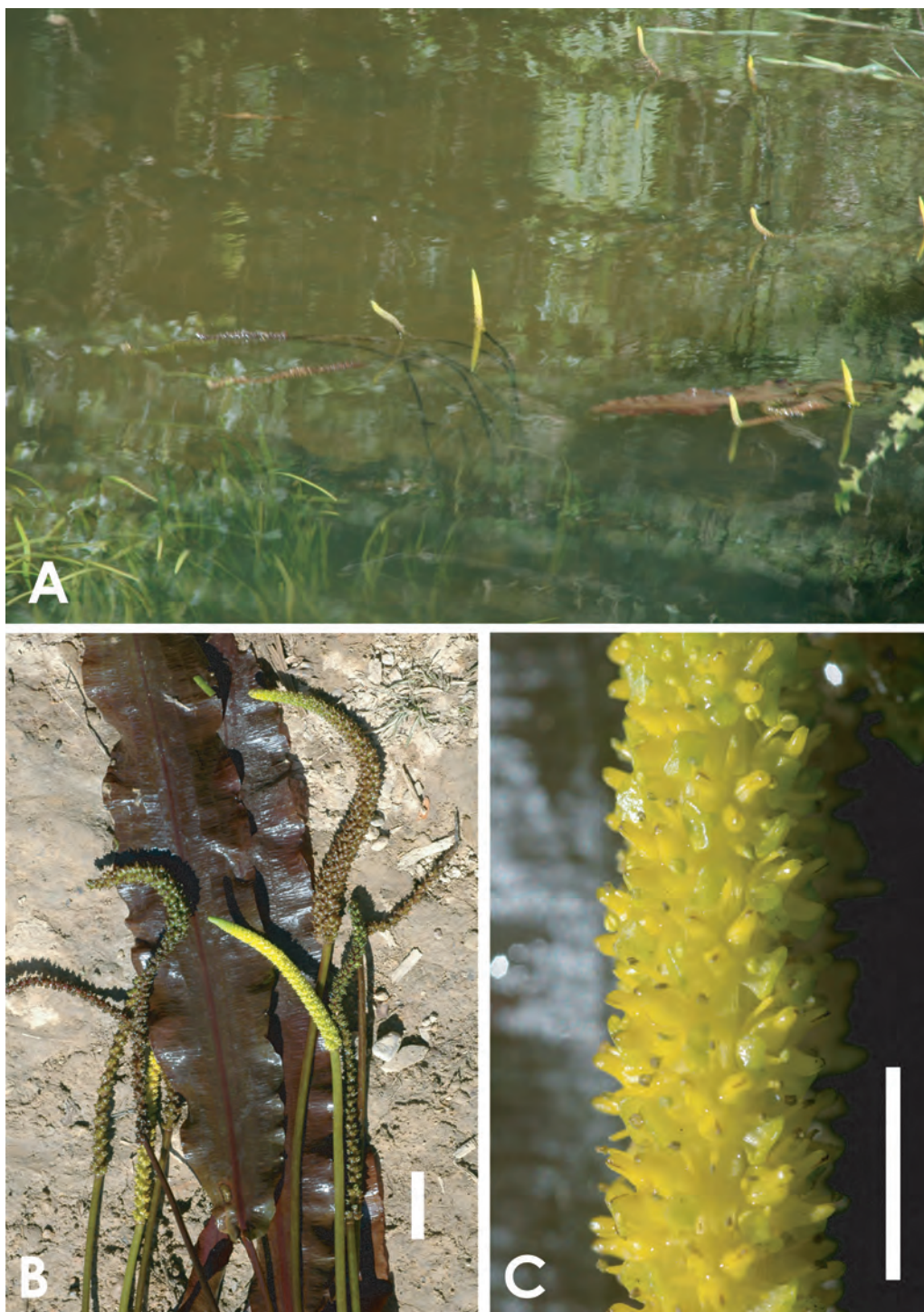


Fig. 1. *Aponogeton lakhonensis*. A: Habitat along the Ledo Road in Shinbuiyang. B: Habit (Scale bar: 3 cm). C: Inflorescence enlarged (Scale bar: 1 cm).





Fig. 2. *Cryptocoryne cruddasiana*. A, B: Habit. C: Longitudinal section of the spathe, showing inflorescence. Scale bar: 1 cm.

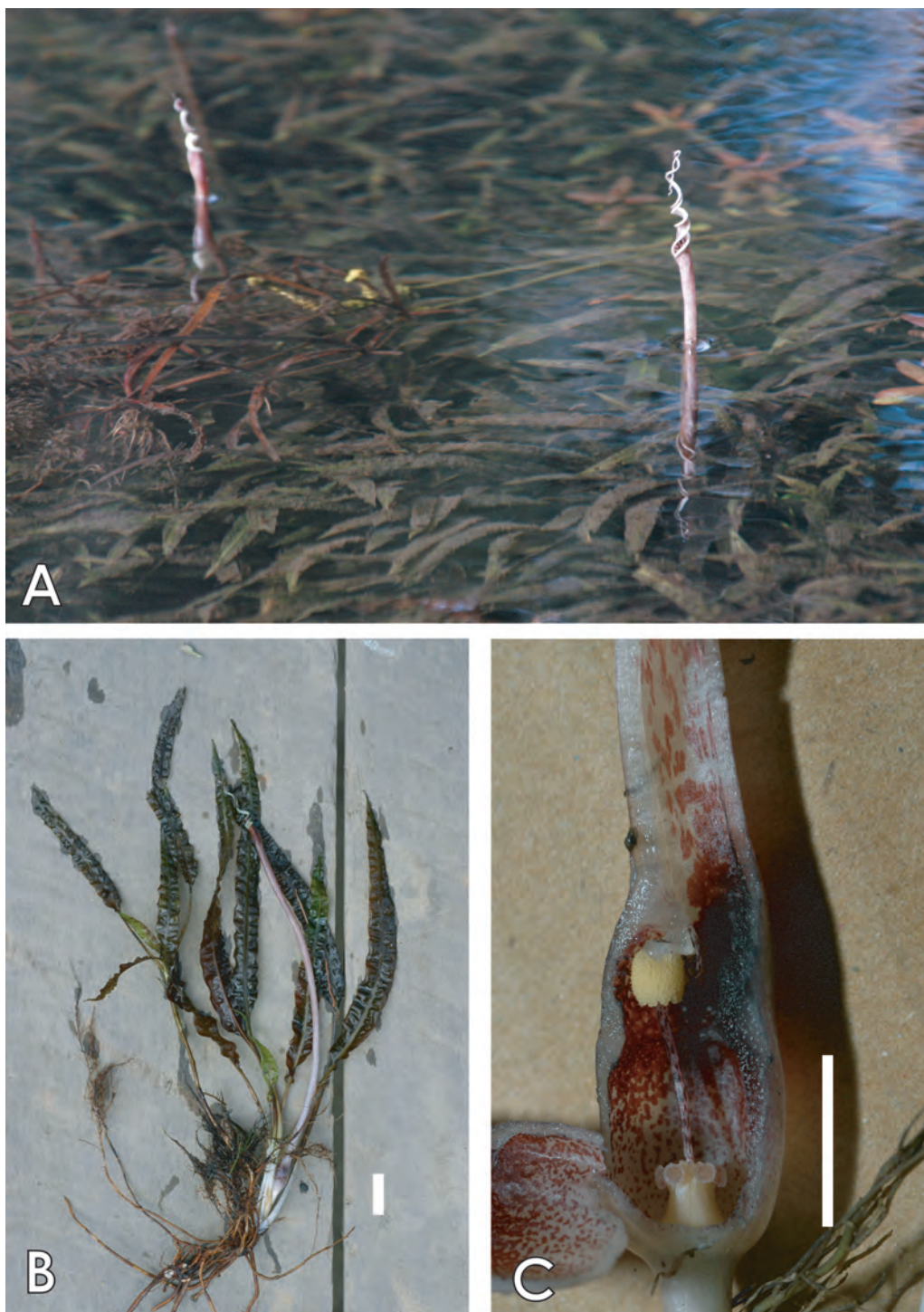


Fig. 3. *Cryptocoryne crispatula* var. *balansae*. A, B: Habit. C: Longitudinal section of the spathe, showing inflorescence. Scale bar: 1 cm.



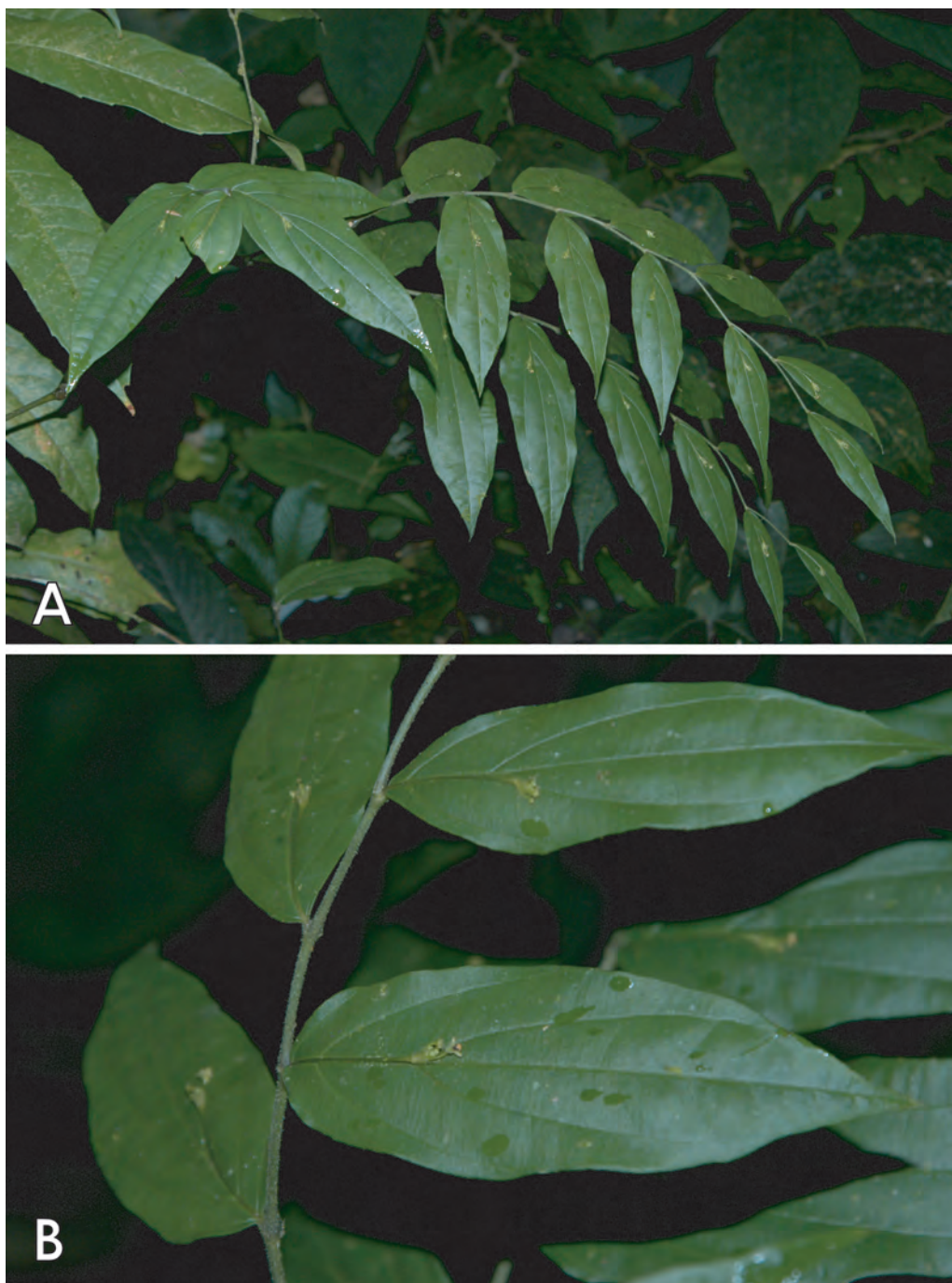


Fig. 4. A: Habit of *Stichoneuron membranaceum*. B: Inflorescence enlarged.

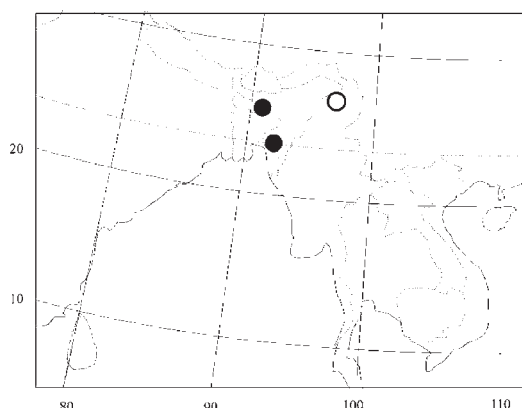


Fig. 5. A: Distribution of *Stichoneuron membranaceum*. Solid circles are based upon Hook. f. (1892). New locality is indicated with open circle.

Myanmar.

This species was found in a stream of about 20 to 30 cm deep with inflorescence in February. It seems to grow in a continuously submerged habitat and produce submerged leaf only.

Voucher specimens: MYANMAR. Kachin State; between Khalone Village, 9 miles east of Shinbuiyang and Shinbuiyang Town, 26°40'29"N, 96°16'33"E, 180 m alt., 5 December 2005, J. Murata & al. 040869 (MBK, TI); along the Ledo Road between Shinbuiyang and Tanain, 248 m alt., 26°56'00"N, 96°52'00"E, J. Murata & al. 041626 (MBK, TI).

Distribution: Thailand, Myanmar, North Vietnam to China (Kwangsi Province).

## STEMONACEAE

***Stichoneuron membranaceum*** Hook. f., Icon. Pl. 18: pl. 1776 (1888); Fl. Brit. India 6: 299 (1892). [Fig. 4]

The genus *Stichoneuron* (Stemonaceae) consists of two species, *S. caudatum* Ridl. and *S. membranaceum* Hook. f. *Stichoneuron caudatum* is distributed in Thailand and the Malay Peninsula, whilst *S. membranaceum* is distributed in India. *Stichoneuron membranaceum* has been known only from a few collections in Khasia, eastern India

(Duyfjes 1993). This species is new to the flora of Myanmar. Our expedition revealed that *S. membranaceum* is distributed from India to Myanmar, and this is the eastern limit of this species (Fig. 5). This species was commonly found growing on the forest floor in Hukaung Valley.

Voucher specimens: MYANMAR. Kachin State: west of Shinbuiyang, 26°41'44"–57"N, 96°11'13"–23"E, alt. 200–250 m, 12 February 2007, J. Murata & al. 041360 (MBK, TI); in the vicinity of Shinbuiyang, north of Shinbuiyang Town, 150–200 m alt., 26°42'07"–42'20"N, 96°11'12"–40'24"E, 14 February 2007, J. Murata & al. 041530, 041555 (MBK, TI). Accession number of *rbcL* sequence in DDBJ: AB302193.

Distribution: India and Myanmar.

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田中伸幸<sup>a</sup>, 田中法生<sup>b</sup>, 大井・東馬哲雄<sup>c</sup>, 邑田仁<sup>c</sup>: ミャンマー植物についての新知見 (2) *Aponogeton lakhonensis*, *Cryptocoryne cruddasiana*, *C. crispatula* var. *balansae* と *Stichoneuron membranaceum*

日華区系の西端としての南ヒマラヤの植物多様性を解析する一連の研究で2005年の雨季終盤からミャンマー北部カチン州のフーコン河谷野生トラ保護区の植物相調査を行っており、カワゴケソウ科やツチトリモチ科などの複数の双子葉類の新産種を結果の一部として報告した (Tanaka et al. 2006). その後、現在までの採集品の検討をさらに進め、2007年2月の乾季中旬にも同地の調査を実施した。その結果、以下のような新知見が得られた。(1) 黄色の花をもつレースソウ属植物は、雄しべがやや短いものの、*Aponogeton lakhonensis* と同一種と考えられる。ミャンマーに新分布である。(2) *Cryptocoryne cruddasiana* は Prain により1900年にミャンマー北部の固有種として記載されたが、その後も数回の採集のみでここ半世紀以上は、標本資料が採集されていなかった。今回の調査により、フーコン河谷だけではなく、ミッチー

ナ付近のイラワジ川本流にも生育が確認された。雨期には休眠しているものと思われ、乾期になってから水が干上がった河床に地上葉を出して開花する。(3) 同属のもう1種は沈水生であり、乾期に浅くなった水面まで花序をのぼして開花するもので、*C. crispatula* var. *balansae* と同定した。タイおよびラオスから中国にかけて知られていたが、ミャンマー新産である。(4) *Stichoneuron* 属は2種からなり、*S. caudatum* はマレーシア地域に分布し、比較的よく知られているが、本属のタイプである *Stichoneuron membranaceum* はインドから採集された数標本資料のみしか知られていなかった。今回の調査により、ミャンマーの北部にはごく普通に分布、生育していることが判った。特に果実の形態については情報がなく、今後の継続的な調査で明らかになるものと考えられる。

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